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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/682,388

08/28/2001

Donald A. Shiffler II

PRS077

5684

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7590

07/13/2004

KENNTH E CALLAHAN

377 ABW/JAN

2251 MAXWELL SE

KIRTLAND AFB, NM 87117

EXAMINER

ROY, SIKHA

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

SA

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/682,388	SHIFFLER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Sikha Roy	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-16 and 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-16 and 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

The Amendment, filed on June 7, 2004 has been entered and is acknowledged by the Examiner.

Cancellation of claims 1-11,17,18 and 20-22 has been entered.

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12 – 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,137,477 to Krol et al. and further in view of U.S. Patent 4,034,031 to Lersmacher et al. and German Patent Specification No. 1,667,650.

Regarding claim 12 Krol et al. disclose (column 1 lines 5-22, column 5 lines 50-59, column 6 lines 20-45) method of coating anode/collector (grid electrode) used in electron tube comprising coating the surface of the carbon electrode by carbonizable phenol resin (in powder or granulate form), then carbonization of the resin, carried out by baking in a furnace in an inert atmosphere at a temperature upto 800 °C and deposition of pyrolytic graphite for increasing thermal and electrical conductivities of the

electrode. Krol et al. further disclose baking the electrode in a vacuum to 1600 °C to remove any remaining impurities.

Claim 12 differs from Krol in that Krol does not exemplify the deposition of coating of pyrocarbon by directing a flow of hydrocarbon gas over the electron impact surface after heating the electron impact surface to at least 1000 °C.

Lersmacher in relevant art of method of manufacturing grid electrodes discloses (column 2 lines 31-50) forming a layer of pyrolytic carbon by directing flow of hydrocarbon (propane  $C_3H_8$ ) gas over the electron impact surface (glassy carbon electrode) at 2000 °C (2300°K). Lersmacher further discloses (column 1 lines 31-50, column 2 lines 1-6) these grid electrodes with coating of pyrolytic carbon have improved mechanical and electrical properties and provide attainment of better vacuum due to absence of pores.

Lersmacher is silent about heating the electron impact surface to at least 1000°C during flow of hydrocarbon gas. But Lersmacher discloses (column 2 lines 16-25) German Patent (Auslegeschrift No.) 1,667,650 which recites a suitable method for manufacturing thin-walled hollow bodies of pyrolytic graphite.

German Patent (Auslegeschrift No.) 1,667,650 discloses (page 7 claim 1) deposition of pyrographite by introducing hydrocarbon on a substrate which has been heated up to 1800 °C. It is noted that when the graphite substrate is heated to 1800 °C and the temperature of the hydrocarbon gas is 200-500 °C higher, it results in high degree of orientation of graphite crystals and resultant pyrographite becomes impermeable to gas.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to deposit the pyrocarbon on the carbonized resin of electrode of Krol et al. by directing flow of hydrocarbon gas over the electrode heated to 1800 °C as suggested by Lersmacher and German Patent (Auslegeschrift No.) 1,667,650 for providing electrode, impermeable to gas and having improved mechanical and electrical properties.

Referring to claim 13 Krol discloses (column 5 lines 57-69) the electrode is heated in vacuum up to 1600 °C to remove any remaining impurities

Regarding claim 14 Krol discloses (column 4 lines 29-65) the carbonization is carried out by heating phenol resin at a temperature when the starting material decomposes , volatile components are released via solid state diffusion and transformation of polymer to carbon (char) takes place.

Regarding claim 15 Krol discloses (column 4 lines 29-35) the carbonization step includes heating the electrode to a temperature treatment up to at least 1000 °C in inert or vacuum (non-oxidizing) atmosphere.

Regarding claim 16 Krol discloses (column 6 lines 16-20, 60-63) the carbonizable resin is phenol resin.

Regarding claim 19 Krol discloses (column 4 lines 29-40) that the coating comprising carbonized resin is formed by baking (heating) the electrode in a non-oxidizing (inert gas or vacuum) atmosphere.

Art Unit: 2879

***Response to Arguments***

Applicant's arguments with respect to claim 12 have been considered but are moot in view of the new ground(s) of rejection.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (571) 272-2463. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*S.R.*

Sikha Roy  
Patent Examiner  
Art Unit 2879

*[Mktg 7/10/04  
Mariceli Santiago  
AU 2879]*